K2 Data Release Notes 10:
Corrected C3, C4, & C5 Short-Cadence TPFs

KSCI-19126-001

K2 Data Analysis Working Group

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These data release notes were originally prepared by members of the Data Analysis Working Group, and made available as webpages in July, 2016, when the data were originally delivered to the Milksulski Archive for Space Telescopes. They are reproduced here for permanent archiving, with edits for clarity and consistency.
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1 Introduction

There is an issue that affects the calibrated data in some of the short-cadence target-pixel files (and resulting short-cadence lightcurves) for the original C0–C5 processings (Data Releases 1–7).

As discussed in detail in KSCI-19080-002, “Global Erratum for Kepler Q0–Q17 & K2 C0–C5 Short-Cadence Data”, the short-cadence data for some targets in Kepler and K2 Campaigns C0–C5 were incorrectly calibrated. Specifically, due to an ambiguous technical specification describing the Pixel Mapping Reference File (PMRF), the collateral smear data correction, used to correct for the effects of Kepler’s shutterless readout, was sometimes applied to the wrong target when calibrating the short-cadence pixel-level data. This can result in an additive effect on individual pixels, as well as a time-varying signal, visible as vertical stripes in the short-cadence images. (See §2.6.3 of the Kepler Instrument Handbook and §5.3.7 of the Kepler Data Processing Handbook for detailed descriptions of smear correction.) Note that the long-cadence data for these or other targets was not affected.

KSCI-19080-002 lists the short-cadence targets for C0–C5 that could have possibly been affected by the error at any level (301 of 665 short-cadence targets), and estimates that ~25% were affected at a non-negligible level. The CSV file from KSCI-19080-002 containing these targets is attached below:

Attached file: K2_scrambled_short_cadence_collateral_target_list.csv

2 Corrected Data

This delivery (Data Release 10) is a reprocessing of the short-cadence target pixel files for Campaigns 3, 4, and 5 that corrects the short cadence collateral bug. This release replaced short cadence target pixel files previously delivered to the archive in Data Releases 5, 6, and 7. No other features of the files or the data processing have changed. The long cadence data are unchanged.

Note that corrected short-cadence data for C0, C1, and C2 were later delivered in Data Releases 28, 14, and 34, respectively.